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Weed Management in Soybean

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Abstract
The purpose of this study was to evaluate preplant incorporated, pre-emergence, and postemergence applied herbicides for soybean phytotoxicity and weed control in glyphosateresistant soybean production.

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Introduction

The purpose of this study was to evaluate pre-plant incorporated, pre-emergence, and post-emergence applied herbicides for soybean phytotoxicity and weed control in glyphosate-resistant soybean production.

Materials and Methods

The crop rotation was soybean following corn. The seedbed was prepared with fall chisel plowing, followed by spring field cultivation. On May 14, pre-plant herbicide treatments were incorporated with a tandem disk operating 2 to 3 inches deep; crop residue was 9% at planting. A randomized complete block design with three replications was used. Herbicides were applied in 20 gallons of water/acre. Visual estimates of crop injury and percentage weed control were made during the growing season. These estimates were compared with estimates on an untreated control and recorded on a 0–100 rating scale (0% = no control or injury; 100% = complete control or crop kill).

'Asgrow variety 2102 RR' soybean was planted on May 14, and pre-emergence (PRE) treatments followed. Post-emergence (POST1, POST2, and POST3) treatments were applied on June 19, July 3, and July 19, respectively. On June 19, soybean was 2 trifoliate and 4 inches tall; on July 3, 4 trifoliate and 6 inches; and on July 19, R1 and 18 inches. Weed growth stage was 1–numerous leaves and .25–3 inches tall on June 27, 0.5–5 inches on July 3, and 2–9 inches on July 19.

Weed species occurring during this study included: giant foxtail, common lambsquarters, common waterhemp, Pennsylvania smartweed, and velvetleaf, with an average population of 25, 2, 3, 2, and 1 plants/ft^2, respectively.

Results and Discussion

The results of the study are summarized in Table 1 and Table 2. On June 11, observation was made of soybean injury caused by several PPI and PRE applied herbicides. As observed on June 19, 27, and July 19, serious soybean injury resulted from many POST1 and POST2 applied treatments. The most injury was caused by POST 1 applied Pursuit plus Ultra Blazer, Raptor plus Ultra Blazer and Fusion plus Flexstar.

Weed control evaluations made on June 19 reflected the degree of activity achieved from the soil-applied herbicides. PRE applied Command plus Authority provided excellent control of giant foxtail, velvetleaf, common waterhemp, common lambsquarters, and Pennsylvania smartweed. Valor applied PRE alone and in tank mixture with Sencor did not control giant foxtail but was effective against the other species. Control of giant foxtail, velvetleaf, common waterhemp, common lambsquarters, and Pennsylvania smartweed was good to excellent with all treatments on July 19, thirty and sixteen days following POST1 and POST2 applied treatments, respectively. Similar results were observed on August 21.

Significant differences in soybean yield between treatments were determined. The lowest yielding treatments, except untreated check, were POST1 applied Pursuit plus Ultra Blazer and Raptor plus Ultra Blazer. Numerous treatments yielded significantly better than these.